Linux Commands

* **Linux:** It is an open-source and community developed OS for computers, servers, mainframes and embedded devices.
* **Why Choose Linux:** 
  + **Free**
  + **Open Source**
  + **Highly secure:** no longer need of antivirus
  + **Stability and Performance:** it rarely slows down and doesn’t require to reboot after installing and uninstalling something. It allows high no. of users to work and handle them efficiently.
* **cat /etc/passwd:** this will open the file Passwd in which you can see no. of users.

**Linux Basic Commands:**

* **man <any command>:** it stands for manual; it tells about the command we write after “man”
* **clear:** it clears the terminal.
* **history:** it shows the history of all the command used in that session.
* **ls:** to list files and directories. (best to use ls -la)
* **pwd:** tells you current directory
* **cd <any directory>:** change directory.
* **whoami:** i.e Who am I, it tells the current user of the system.
* **echo:** to print something in terminal
* **su <user\_name>:** to change user (*use only su to move to root from another user*).
* ***sudo bash:*** *it is used to move to root user if su doesn’t work*
* **sudo:** this command is used by those users who doesn’t have full permissions.
* **adduser <name\_of\_new\_user>:** it adds new user (use sudo before code if you are not logged in as root).
* **usermod -aG sudo username** (usermod command to add the user to the sudo group)
* **passwd <user\_name>:** to set the password.
* **userdel <user\_name>:** to delete the user.
* **groupadd <group\_name>:** to add new group.
* **groupdel <group\_name>:** to delete group.
* **touch:** to create files.
* **vi <file\_name>:** it opens the file for editing. (press i to go in edit mode, then press Esc and write: wq (w for write and q for quit) and hit enter to save the file)
* **cat <file\_name>:** to read the file
  + **Flags**
    - **Cat -b <filename>:** to add numbers to lines
    - **Cat -n <filename>:** to add numbers to every line even blank line.
    - **Cat -E <filename>:** it adds $ after every line
* **cp <filename> <path>:** to copy file
  + **Flags**
    - **Cp -n <filename> <path>**: this doesn’t override the file
    - **Cp -u <filename> <path>**: this update the destination file only if the source file is diff from it.
    - **Cp -R <Directory> <path>**: recursive copy directories and it even copies hidden files.
* **mv <filename/Directory> <path>:** to move file/directory
  + **Flags:**
    - **mv -i <filename/Directory> <path>:** it enters into interactive mode and cmd line ask for overriding the file
    - **mv -u <filename/Directory> <path>:** it updates the file if the destination file is different from the source file.
    - **Mv -v <filename/Directory> <path>:** it enters into verbose mode (Verbose mode provide addition data)
* **rm <filename>:** remove the files and directories
  + **Flags:**
    - **Rm -r <filename>:** it removes even non-empty directories.
    - **Rm -rp <filename>:** it removes non-empty directories even parents and sub-directories.
* **mkdir <dir\_name>:** creates directories
  + **Flags:**
    - **Mkdir -p <dir\_name>:** it creates both parent and sub-directories.
* **rmdir <dir\_name>:** remove directory (by default removes empty directories)
  + **Flags:**
    - **Rmdir -p <dir\_name>:** removes both parent and child directories.
    - **Rmdir -pv <dir\_name>:** removes both parent and child directories with verbose.
* **grep <word> <filename>:** it is used to find a word or a string in a file. (like Ctrl+F)
* **sort <filename>:** it sorts the text of the file alphabetically (Vertically)
* **chown <owner> <filename>:** to change the owner of file.
* **chmod <numbers> <filename>:** change permissions on a file.
  + **Eg. Chmod 754 test.txt**
    - **Read (r): 4**
    - **Write (w): 2**
    - **Execute (x): 1**
* **lsof:** it provides the list of open files
  + **lsof -u <username>:** it provides the list of opened files by a particular user.
* **tar -cvf <new\_tar\_file\_name> <files>:** to create .tar compressed file. (cvf: c for create mode, v to show the output, f is file option)
* **tar -xvf <tar-file>:** to extract a tar file (x: for extract)
* **gzip <filename>:** to create a zip file.
* **Gunzip <filename>:** to unzip a file.
* **sed ‘s/<Word\_to\_be\_Replaced>/<new\_word>/’ <filename>:** it is used to replace a word from a file.
* **uniq <filename>:** to find duplicate lines
  + **Flags:**
    - **uniq -c <filename>:** show no. of occurrence
    - **uniq -d <filename>:** prints one example of duplicate lines
    - **uniq -D <filename>:** prints all duplicate lines
* **watch <flag> <command>:** execute a program periodically, showing output fullscreen.
  + **Eg.** watch -d free -m
* **free:** it shows the memory (total, used, free, shared (used by temp folders, buffers, etc)
  + - **Flags:** 
      * **Free -b:** show memory in bytes.
      * **Free -k:** show memory in kilo bytes **(default)**
      * **Free -m:** show memory in Mega bytes
      * **Free -g:** show memory in Giga bytes
* **vmstat:**
* **eval <args>:**
* **dd:** it is used convert and copy the data
  + **Eg.** If you want to take backup of your hard disk to another then we use this command.

**dd if = /dev/hdA of = /dev/hdB : if** stands for input file and **if** stands for output file. hdA is 1st hard disk and hdB is 2nd hard disk. Yellow is source device Red one is target device.

* **ssh ip:** to remotely access a system
* **ssh-keygen: ssh-keygen -t rsa**
* **ip address:** it shows all ips of various network devices
* **netstat:**
* **nslookup <option>:** it gives the details of domain like server, id addresses, dns, etc.
* **curl <option> URL:** it is used transfer data from or to a server using one of the supported protocols like FTP, FTPS, HTTP, HTTPS, SFTP, etc.
* **awk:** it is a scripting language used to manipulate data and generating reports. **awk** is abbreviated on the names of the developers i.e A- Ahock, W- Wenburger, K- kernygen.

Eg. to print every line in a file: **awk ‘{print}’ <filename>**

Eg.to print only those line with word ip: **awk ‘/ip/ {print}’ <filename>**

* **tr:** it translates, squeeze and/or delete from standard input to standard O/P. It is used with pipe (|)

**Eg. cat <filename> | tr “[a-z]” “[A-Z]”** This will convert the text of file in uppercase.

* **env:** it runs the program in a modified environment.
  + **env -i command:** torun a command in empty environment.
  + **env -u variable-name:** to remove a variable from environment.
* **iptables:** administration tool for ipv4/ipv6 packet filtering and NAT
  + **eg.** **services iptables stop**: it is used to stop firewall.
* **apt-get:** it is a package handling utility.
  + **Eg.** **apt-get install vim:** it is used to install vim editor.
* **df:** it is used check the disk usage. Total, fee, used space and threshold %.
  + **df -h:** show memory in kb, mb, gb i.e human readable format.
* **du:**  to see disk utilization
  + **Flags:**
    - **du -h <path-of-dir>:** to see disk blocks in human readable form i.e in KB, MB
    - **du -sh <path-of-dir>:** total summary of disk blocks
    - **du -ah <path-of-dir>:** total disk usage of directories and files in kb, mb
* **Inode:** it is no. which is attached with every file and folder. Computer use this to identify files and folders.It has the info regarding file and folder like size, date creation, etc. (ls -i)
* **Umask:** it is default permission or base permissions given when a new file or folder. Default is 002 which mean rwxr-xr-x.

**OS has two prime components which are Kernel and Shell**

**Kernel:** It is at the nucleus of a computer. It makes the communication b/w hardware and software.

Kernel is the innermost part of OS and Shell is at outermost.

**Shell:** The shell is a Command Line Interpreter. It translates the commands entered by user and converts them into a language that is understood by kernel.

**Shell Scripting:** It is writing a series of command for the shell to execute. It can combine lengthy and repetitive commands into a single script which can be stored and executed at any time.

Command to find a path of directory: locate –b ‘\directory\_name’